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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

U. Serial No.: 10/632,000 Confirmation No.:  
Filing Date: 7/30/2003 Art Unit:  
Inventor: Wolman, Abel Examiner:  
Title: GEOMETRIZATION FOR PATTERN RECOGNITION, DATA  
ANALYSIS, DATA MERGING, AND MULTIPLE CRITERIA  
DECISION MAKING  
Attorney Docket: 1624-3641

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		Application Number	10/632,000
		Filing Date	07/30/2003
		First Named Inventor	Wolman, Abel
		Art Unit	2171
Examiner Name			
Sheet 1	of 6	Attorney Docket Number	1624-3641

NON PATENT LITERATURE DOCUMENTS			
Examiner Initials*	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T <sup>2</sup>
	1	BAIRD, J. C., Selection from Fundamentals of Scaling and Psychophysics, Wiley, 1978, pp. 177-205.	
	2	BORG, I. AND GROENEN, P., Modern Multidimensional Scaling: Theory and Applications, Springer, New York, 1997, pp. 15-27; 159-173.	
	3	CARROLL, J. D. AND CHANG, J., "Analysis of individual differences in multidimensional scaling via an n-way generalization of "Eckart-Young" decomposition," Psychometrika, 35,	
	//	1970, pp. 283-319.	
	4	COMMANDEUR, J. AND HEISER, W., "Mathematical derivations in the proximity scaling (Proxscal) of symmetric data matrices," Tech. Report No. 99-93-03, Department of Data Theory,	
	//	Leiden University, Leiden, The Netherlands, 1999.	
	5	CUNNINGHAM, J. P. AND SHEPARD, R. N., "Monotone mapping for similarities into a general metric space," J. Math. Psychol., 11, 1974, 335-363.	
	6	DE LEEUW, J. AND HEISER, W., "Theory of multidimensional scaling," in P. R. Krishnaiah and L. N. Kanal, Eds., Handbook of Statistics, Vol. 2. North-Holland, New York, 1982, pp. 335-314	
	7	FANG, W., "Disagreement degree of multi-person judgements in an additive structure," Mathematical Social Sciences, 28, 1994, pp. 85-111.	
	8	GIFI, A., "Algorithm descriptions for Anacor, Homals, Princals, and Overals," Tech. Report No. RR-89-01, Department of Data Theory, University of Leiden, 1989.	

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	9	GOODHILL, G. J. ET AL., "An evaluation of the use of multidimensional scaling for understanding brain connectivity," Research Paper EUCCS/RP-63, University of Edinburgh, 1994,	
	//	1994, pp. 1-23.	
	10	KENDALL, G. D., "Seriation," in Hodson et al., Mathematics in the Archaeological and Historical Sciences, 1970, pp. 215-251.	
	11	LINGOES, J. C. ET AL., Geometric Representations of Relational Data, Mathesis Press, Ann Arbor, 1979, pp. 313-317, 529-539, 791-815.	
	12	MC GEE, V. E., "The multidimensional analysis of 'elastic' distances," The British Journal of Mathematical and Statistical Psychology, 19, 1966, 181-196.	
	13	MC GEE, V. E., "Multidimensional scaling of n sets of similarity measures: a nonmetric individual differences approach," Multivariate Behavioral Research, 1968, pp. 233-249.	
	14	MIELKE, P. W. AND BERRY, K. J., Permutation Methods: A Distance Function Approach, Springer, New York, 2001, pp. 32-36.	
	15	NARENS, L., Theories of Meaningfulness. Lawrence Erlbaum, Mahwah, New Jersey, 2002, pp. 45-56.	
	16	OSBORNE, D. K., "Further extensions of a theorem of dimensional analysis," J. Math. Psychol., 7, 1970, pp. 236-242.	
	17	OVCHINNIKOV, S., "Means of ordered sets," Math. Social Sci., 32, 1996, pp. 39-56.	

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	18	ROBERTS, F. S., "Limitations on conclusions using scales of measurement," in S. M. Pollock et al., Eds., Handbooks in OR & MS, Vol. 6, Elsevier, New York, 1994, pp. 621-669.	
	19	SAATY, T. L., Selections from The Analytic Hierarchy Process: Planning, Priority Setting and Resource Allocation, RWS Publications, Pittsburgh, 1990, pp. a19-a24.	
	20	SCHIFFMAN, S. S. ET AL., Introduction to Multidimensional Scaling, Academic Press, 1981, pp. 74-82, 321-333.	
	21	SIEGEL, S. AND CASTELLAN, J., "Nonparametric statistics for the social sciences," 2nd Ed., McGraw-Hill, 1988, pp. 22-36.	
	22	SINHA, D. ET AL, "A general class of aggregation operators with applications to information fusion in distributed systems," 1989 IEEE Intel Conference on Systems,	
	//	Man and Cybernetics, (PROC), 1989, pp. 921-927.	
	23	STEVENS, S. S., "On the theory of scales of measurement," Science, 103, 1946, pp. 677-680.	
	24	TAKANE, Y. ET AL., "Nonmetric individual differences multidimensional scaling: an alternating least squares method with optimal scaling features," Psychometrika, 42,	
	//	1977, pp. 7-67.	

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	25	WISH, M. AND CARROLL, J. D., "Multidimensional scaling and its applications," in P. R. Krishnaiah and L. N. Kanal, Eds., Handbook of Statistics, Vol. 2. North-Holland,	
	//	pp. 317-345	
	26	YOUNG, M. "The organization of neural systems in the primate cerebral cortex," Biological Sciences, 252, 1993, pp. 13-18.	
	27	ZHOU ET AL., "A linearly constrained least squares approach for multisensor data fusion," SPIE, 3067, 1997, pp. 118-129.	
	28	PERREAULT, W. D. AND YOUNG, F. W., "Alternating least squares optimal scaling: analysis of nonmetric data in marketing research,"	
	//	Journal of Marketing Research, 17, 1980, 1-13.	

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Sheet 5

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Examiner Initials*	Cite No. <sup>1</sup>	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number-Kind Code <sup>2</sup> (if known)			
		US- 5,321,613	06-1994	Porter et al	
		US- 5,437,279	08-1995	Gray, Lincoln C.	
		US- 5,706,402	01-1998	Bell, Anthony J.	
		US- 5,729,451	03-1998	Gibbs, et al	
		US- 5,175,710	12-1992	Hutson	
		US- 5,181,259	01-1993	Rorvig	
		US- 5,235,506	08-1993	O'Brien, Jr.	
		US- 5,245,587	09-1993	Hutson	
		US- 5,402,335	03-1995	O'Brien	
		US- 5,348,020	09-1994	Hutson	
		US- 5,422,961	06-1995	Simard	
		US- 5,437,279	08-1995	Gray	
		US- 5,490,516	02-1996	Hutson	
		US- 5,574,837	11-1996	Clark et al	
		US- 5,579,766	12-1996	Gray	
		US- 5,596,644	01-1997	Abel et al	
		US- 5,602,938	02-1997	Akiyama et al	
		US- 5,625,767	04-1997	Bartell et al	
		US- 5, 802,207	09-1998	Huang	

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Sheet	6	of	6
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